DOCUMENT RESUME

ED 333 583 EA 023 099

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TITLE Experience and Expertise in Administrative Problem Solving.
PUB DATE Apr 91
NOTE 35p.; Paper presented at the Annual Meeting of the American Educational Research Association (Chicago, IL, April 3-7, 1991).
PUB TYPE Speeches/Conference Papers (150) -- Reports - Research/Technical (143)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS *Administrative Problems; Administrator Evaluation; *Decision Making; Elementary Secondary Education; Foreign Countries; *Measurement Techniques; *Measures (Individuals); Personality Measures; *Problem Solving; *Work Experience
IDENTIFIERS *Ontario

ABSTRACT

Findings from a study to identify and compare differences between expert and novice administrators in problem-solving approaches and perceptions are reported in this paper. The 7 paper and pencil instruments completed by 32 elementary school principals and 10 preservice educational administration students are described in detail. Of the instruments, three were developed for the study and four were derived from the literature. Instruments included: (1) value orientation; (2) problem-solving orientation; (3) worries; (4) least preferred coworker; (5) the Ghiselli Self-Description Inventory; (6) role components; and (7) personal profile. Purposes of the pencil and paper battery were to generate quantitative data for hypothesis testing, improve triangulation, and control background variables. No significant relationship was found to exist between experience and professional orientation or between expertise and experience in the principalship. Complex relationships among personality variables and problem-solving behaviors were identified. A conclusion is that differences in problem-solving approaches may be due to differences in principal certification requirements. An implication is that if on-the-job experience does not necessarily contribute to expertise, the validity of mentoring and internship training programs is called into question. Seven tables are included. (7 references) (LMI)

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EXPERIENCE AND EXPERTISE IN ADMINISTRATIVE PROBLEM SOLVING

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[This study was funded by the Social Sciences Humanities Research Council.]

[Paper prepared for a symposium presentation to the American Educational Research Association Annual Conference, Chicago, April 199 .]

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PAPER AND PENCIL INSTRUMENTS

In the second section of the data collection day described in the first paper, respondents in the Aspirant, Rookie, Seasoned and Veteran groups were asked to complete seven paper and pencil instruments. Three of these instruments were specially created for this study; the remaining four were taken from other sources.

#1: Value orientation

This instrument was developed for this study. Ten statements, each reflecting a particular priority in value orientation for principals (e.g. "Enhancing the quality of student life and experience"), were grouped into pairs, in such a way that every possible combination occurred. The resulting instrument was discussed with colleagues to ensure face validity, and, as a result of these consultations, one additional priority statement was added and two were eliminated. The remaining nine priority statements yielded thirty-six pairs of statements, each specific statement appearing eight times in all. Participants were asked to select which of the two statements in each pair "is more important to you when dealing with problems in your school".

#2: Problem orientation statements

This instrument was also developed by the research team for this study. Twenty-three statements relating to the problem solving context of principals (e.g., "Principals always face more problems than they can deal with") are listed and respondents are asked to declare the extent to which they agree with each statement, using a Likert-type scale, in which 5 indicated very much agreement and 1 none at all.

#3: Worries

The third instrument was developed for the National Principals' Survey (Gross & Trask, 1976) in the United States and consists of eleven statements of "things that sometimes trouble principals" (e.g. "I worry about possible physical injuries to individual students while they are at school"). Respondents are asked to declare the extent to which each statement applies to them, using a Likert-type scale, wherein 5 represents "frequently" and 1 "never".

#4: Least Preferred Co-worker

This well known instrument was constructed by Fiedler in 1967 and is widely used. It consists of 18 pairs of opposing adjectives (e.g. "Gloomy....Cheerful", "Rejecting....Accepting"). Respondents are asked to think about all the people with whom they have ever worked, to choose from this number the person they least liked working with and then to rate that person on each of the adjectival sets, using an eight point scale.

#5: Ghiselli Self-Description Inventory

This instrument was created by Ghiselli as a result of an extensive study of business and industrial managers during the 1960s and 1970s. The instrument was selected for this study because it is highly regarded for its validity and reliability[1] (Thornton & Byham, 1982, p.114-116), and provides a measure of personal and managerial characteristics which were not otherwise explored in this study. There are thirteen scales in the instrument: Supervisory Ability, Intelligence, Initiative, Self-Assurance, Decisiveness, Masculinity/Femininity (M/F), Maturity, Working Class Affinity, Achievement Motivation, Need for Self Actualization, Need for Power, Need for High Financial Reward and Need for Job Security. The instrument itself consists of two pages of paired adjectives. On the first page, respondents are asked to select the adjective which better

describes them, and on the second page, they are asked to select the adjective which least describes them. Each adjective in a pair is scored on a number of scales and is weighted differently on different scales. When all scoring and weighting is complete, each respondent has a separate score for each of the thirteen scales.

#6: Role components

This instrument was also developed for the National Principals' Survey (Gross & Trask, 1976). It consists of 25 statements relating to the role of the principal (e.g. "Talking with individual parents about a problem concerning their child"). Respondents are asked to declare the extent to which they enjoy each of these aspects of the role, using a Likert-type scale in which 5 represented a great deal of enjoyment and 1 represented none at all.

#7: Personal profile

Finally, respondents were asked to complete a detailed personal profile, consisting of six sections: Personal Background, Formal and Professional Education, Teaching Experience, Experience as a Principal, Related Education and Training, and Current School.

PROBLEM SOLVING INDICATORS

Seven quantitative variables were created from the fact-finding and think-aloud portions of the data collection, so that observed behaviours could be compared with the pencil and paper data.

Questions Asked: This variable represents the actual number of questions asked by the respondent in the fact finding portion of the case study.

Areas Covered: This variable reflects an analysis of the different types of information the participant acquired in his/her questions.

Questioning Efficiency: When the latter variable was divided into the former, a new variable was created , which provides a measure of the average number of questions which the participant asked in order to uncover a specific segment of information.

Total Word Count: This variable was calculated by counting the number of words used by the respondent in the think-aloud portion of the study, including those used during the reading of the case study, not counting the words of the case itself and those used during the thinking aloud portion of the exercise.

Action Count: Each transcript was read over and reduced to a summary of the actions proposed by the participant. The number of actions listed for each respondent was then entered as a new variable.

Word/Action Ratio: Total Word Count was divided by the Action Count to provide this variable.

It was decided that a measure of the relative quality of each respondent's proposed approach to dealing with the case study problem could be useful. Earlier work (Allison & Nagy, 1989) has shown that presenting evaluators with a complete transcript was somewhat dysfunctional, and so the action summary was used instead. Each action summary contained the actual words of the participant for each action -- usually a sentence or two but sometimes more -- and thus retained the individual character of the original transcript, as well as the subtle differences in the way the same action might be proposed (e.g. talking to the librarian about lost books was expressed by one participant as "I would have to challenge her in that area" and by another as "I think one of the problems I'll have to address with her is how to get overdue books back"). The action summaries were assigned random numbers and re-ordered. Three judges, all

with extensive experience in related but different areas of educational administration, were given the summaries and asked to rate them on a scale of 1 to 10, where 10 represented an excellent response and 1 represented an entirely inadequate response to the problem.

Quality Mean: The three ratings (the correlations of which are reported in Table 1) were averaged to create this final variable.

RESULTS

Preliminary analyses were run on all paper and pencil data and the variables created from the case study transcripts. The second, third, fourth and sixth instruments did not provide any immediately interesting correlations with the post-hoc problem solving variables. Since the focus of this paper is to explore the such correlations, only the remaining three instruments will be discussed further. Future reporting and analysis will probably return to the temporarily jettisoned instruments.

PAPER AND PENCIL MEASURES

#1. Priorities/Values

Since the maximum number of times a single statement could have been chosen out of a pair was eight, any statement which was selected eight times must have been considered by the respondent to be more important than any other statement. A statement which was never selected at all must have been considered less important than any other statement. Table 2 shows rank ordered results of a frequency count of responses and the mean number of times each statement was selected.

Nineteen of the thirty-two respondents (61%) selected a single statement

every time it appeared. Eleven of these respondents selected "Enhancing students' sense of self-worth" every time it appeared and four selected "Building self-confidence in staff members" every time. Neither of these selections correlated with experience in the principalship. One respondent selected "Enhancing the quality of student life and experience" every time and another single respondent selected "Improving instructional effectiveness" every time. Two respondents, both in the upper half of the experience range, chose "Following board policies and procedures" every time it appeared, but three respondents in the same experience category rejected this statement every time it appeared. Eight respondents rejected the statement "Avoiding future problems" every time it appeared and seven rejected "Minimizing disruptions".

Factor analysis of the responses to this questionnaire yielded a four factor solution, as shown in Table 3. The first factor seems to convey an orientation in which students are of prime importance, and 9 respondents scored highly on this. The second factor seems to value smooth operations, perhaps sometimes short-cutting established procedures and 10 respondents had high scores on this. Five of the eight new principals (Rookies) scored this as a dominant factor -- clearly for new principals this is a major concern. The third factor values the improvement of instruction, and 11 respondents scored highly on this factor. The fourth factor could be seen to value planning for the future, or could be read more pejoratively as a desire to avoid future blame and smooth over problems in the most expeditious way possible, especially in light of the negative value of building the confidence of staff members. Three respondents had high scores on this.

#5. Ghiselli Self-Description Inventory

Table 4 shows the raw scores on each scale for all respondents, and Table 5 shows the mean scores for each experience group.

The overall mean of this group on the Supervisory Ability scale, which measures "the capacity to direct the work of others" (Ghiselli, 1971, p.39) was 29.7 (SD 5.5), compared with the 30.5 mean (SD 6.26) which Ghiselli's business and industrial managers scored. There was a significant difference (p=.02) between the mean of principals in the Seasoned group and those in the Veteran group, with the latter scoring much higher.

On the Intelligence scale, which measures "judgement and reasoning, and the capacity to deal with ideas, abstractions and concepts...the ability to learn, insightfulness and the capacity to analyze and synthesize" (Ghiselli, 1971, p.45) our respondents scored a mean of 40.9 (SD 7.69), compared with 41.6 (SD 7.57) scored by Ghiselli's managers. There was a significant difference (p=.05) between the scores of Rookie and Seasoned principals, with the former scoring higher.

There were no significant differences among the groups on the next four scales. On the Initiative scale ("the ability to act independently and...the ability to initiate actions without stimulation and support from others" Ghiselli, 1971, p. 49), the Self Assurance scale ("the extent to which the individual perceives him[/her]self to be effective in dealing with the problems that confront him[/her]" Ghiselli, 1971, p.57), the Decisiveness scale, and the M/F scale, these respondents scored close to but slightly below the means scored by Ghiselli's managers. Table 4 gives the means and standard deviations of these measures.

On the Maturity scale, which measures "the extent to which an individual's

self-image is more like that of older persons or more like that of younger individuals" (Ghiselli, 1971, p.68), our respondents scored 27.4 (SD 5.56), as compared with 31.6 (SD 5.83) in the Ghiselli study. There was a significant difference (p=.03) between the scores of Rookies and Veterans on this scale, with, surprisingly, the Rookies being more inclined to identify with older people.

Ghiselli summarises the idea of the Working Class Affinity scale as the extent to which an individual "would prefer to be with, to work with and to share the common problems with those of the 'working class'" (1971, p.71). He hypothesized that there were two possible interpretations of the relationship between this factor and managerial success (1971, p.72-73). On the one hand, managers who empathize with and understand workers ought to be more effective since they will relate better to the workers and be well thought of. This better relationship should lead to better productivity from the workers, and thus productivity was one measure used to assess managerial talent in the Ghiselli studies. On the other hand, it can be argued that the priorities and perspectives of workers are not necessarily consistent with those of the organization and thus a manager who held such views would be less than effective. Furthermore, managers who identified with the perspectives of workers might be seen to be less successful by their superiors, who, according to sociological theory, belong to a different class and hold different values. This latter point provides the second measure of managerial talent used by Ghiselli -- ratings given by superiors. Ghiselli's studies demonstrated that the second case appears to pertain: managers with low Working Class Affinity are more effective, although the relationship was not a strong one. His managers scored a mean of 14.5 (SD 3.28) on this scale; our scored a mean of 13.84 (SD 2.81). There was a significant difference (p=.02) however, between the scores of Aspirants and Veterans on this scale, with the

Aspirants achieving a much higher Working Class Affinity than the Veterans. When the experience groups are collapsed, such that Aspirant and Rookie principals were grouped together and Seasoned and Veteran principals were grouped together, this difference becomes even more significant ($p=.007$), the Aspirant/Rookie group scoring much higher on Working Class Affinity than the Seasoned/Veteran group.

In the original context of Ghiselli's work, the meaning of 'working class' was relatively clear, but in this study, it is something of a moot point to discern what Working Class Affinity means in the context of the school. It might be argued that the 'working class' should be defined within the organizational structure rather than within society at large. Whereas some scholars have argued that the students are the real 'workers' in a school, most would probably see classroom teachers as being the 'working class' in organizational terms. If this contextual definition is accepted, then Working Class Affinity in this study could be a measure of the extent to which respondents identify themselves with classroom teachers, which would certainly explain why people who have been administrators for a long time would score significantly lower on this scale.

There were no further significant differences among the groups in this study on the remaining five scales. These respondents score slightly above Ghiselli's managers in Need for Self Actualization and slightly below in Need for Power, Need for Job Security and Achievement Motivation.

Factor analysis of these data yielded four factors, as shown in Table 6. The first factor contains five of the six scales which Ghiselli identified as being the best predictors of managerial success and thus might be called the managerial factor, and was the dominant factor in twelve cases. The second factor seems to relate to self motivation and was dominant in six cases. The third factor seems to

reflect a rather passive orientation and the fourth contains only the mysterious but apparently powerful Working Class Affinity scores. Six respondents scored with the third factor dominant and 8 with the fourth. The distribution patterns were insignificant, except that none of the Rookies scored on the third factor -- they are apparently not a passive group.

#7. Personal Profile

Participants were selected from four experience categories, as explained above: the Aspirant group contained only people with a Principal's Certificate but no experience in the principalship; the Rookie group contained new principals, with an average of 1.6 year's experience; the Seasoned group contained principals with an average of 13.6 years' experience; and the Veteran group contained principals appointed before consolidation (1969), with an average of 23.9 years' experience. These wide variations in mean experience might suggest a similarly wide variation in age and other related factors, but this did not prove to be the case; there is even considerable overlap between the groups. Whereas the Veteran principals were on average 49 years of age, the Seasoned principals were only 3 years younger at 46, the Rookies on average 43, and the Aspirants 39. Thus, although there was a difference of 23 years' average experience as a principal between Rookies and Veterans, there was only an average of 6 years' difference in their ages. This discrepancy is not explained by late entry to the profession. Veteran principals had been in schools on average 28 years, Seasoned principals 26, Rookies 23 and Aspirants 17. Thus the Rookies who are on average only 6 years younger than Veterans, have been in schools only 5 years less than the Veterans but the Veterans were appointed to principalships on average 23 years sooner. The only reasonable explanation seems to be found in the history of the Ontario education system. The first wave of consolidation in

the middle sixties saw the creation of hundreds of township schools. These new schools, with their burgeoning population, replaced the myriad tiny section schools which for the most part were staffed by female teachers and did not have principals. Thus there was an urgent need for new principals; since the prevailing attitudes of the time virtually required that a principal be male, and since there were few males teaching in elementary schools, many of the new appointees had very little prior experience. In our sample, for example, two of the principals in the Veteran category were in fact appointed to principalships without any teaching experience at all. The final consolidation in 1969 saw the township schools consolidated into county systems, such that the demand for new principals actually dropped. At about the same time, provincial regulations changed such that elementary school teachers were required to hold a university degree in order to qualify for a Teaching Certificate. Thus, for a very brief period it had been possible for a young male to become an elementary teacher without holding a university degree and then to become a principal very soon after joining the profession, if not immediately. Circumstances changed very quickly and those who had not been promoted during that period had missed the opportunity of rapid advancement. Thus, the sample of respondents used in this study represents graphically the development of the Ontario system: the Veterans all began teaching without a university degree and were promoted directly into principalships within a few years; the Seasoned principals also mostly started teaching without a degree and usually served several years in a subordinate position of added responsibility before being promoted to a principalship some years later; the Rookies were more likely to hold degrees before beginning teaching, spent more years in the classroom and often a significant number of years in a subordinate position of added responsibility

before being promoted to a principalship. Table 7 summarises the basic demographic data for the four experience groups.

Only 10 of the 32 respondents completed an undergraduate degree before beginning teaching but all but one now hold such a degree. Twenty-six of the 32 respondents also hold graduate degrees: 2 (6%) hold graduate degrees in areas other than education, 10 (32%) in an area of education other than administration, and 14 (45%) in educational administration.

Six of the 32 respondents are female. It was intended that, if at all possible, equal representations of male and female respondents would be selected. This was only possible in the Aspirant group, in which exactly half of the group are female. In the Rookie group only two females responded to the call for volunteers, and there were no female volunteers in the Seasoned and Veteran groups at all.

Seven of the respondents hold Supervisory Officer certificates, by far the majority of these (63%) being among the Veteran group.

CORRELATIONS WITH PROBLEM SOLVING INDICATORS

Significant correlations were found in several instances when the data from the instruments described above and the quantified problem solving indicators from the case study were analyzed.

There are a number of correlations between the variables generated by the fact-finding and think-aloud portions of the data and the pencil and paper data which provide interesting opportunities to explore the match between what the respondents say they do and what they were observed to do.[2]

1. **"Enhancing the quality of student life"** from the Priorities/Values instrument correlated positively with the number of areas covered in the fact finding portion of the case study ($r = 0.393$; $p = 0.03$). Re-inspection of the transcripts of respondents who scored highest on this item (i.e., selected this priority most often) does indeed show that they tended to cover all of the possible topic areas relating directly and indirectly to students, thus exploring a greater number of areas than other respondents and validating their declared emphasis on the quality of student life. (This values item also correlated with the Ghiselli score for Supervisory Ability ($r = 0.413$; $p = 0.02$), apparently indicating that administrators who have high supervisory ability are more likely to see students as the important factor in school problem solving.)

2. **"Avoiding unnecessary hurt"** from the Priorities/Values instrument correlated positively with the number of actions taken in solving the case study ($r = 0.397$; $p = 0.03$) and with questioning efficiency in the fact finding portion of the case study ($r = 0.461$; $p = 0.001$) but negatively with the Ghiselli Self Assurance scale ($r = -0.401$; $p = 0.02$), indicating that those administrators who are more concerned about avoiding hurting others were less self assured but covered more areas in their questioning and took more actions. When the transcripts of the respondents who scored highest on this item were examined, it was evident that in every case a number of the 'extra' actions which they took were, indeed, specifically intended to ensure that different individuals were dealt with sensitively.

3. The **Need for Self Actualization,** from the Ghiselli instrument, correlated positively with the total number of questions asked in the fact finding portion of

the case study ($r = 0.474$; $p = 0.007$), the number of areas covered in questioning ($r = 0.428$; $p = 0.01$), and with questioning efficiency ($r = 0.382$; $p = 0.03$). In this study, therefore, respondents who scored highly on their natural propensity to "seek the opportunity to utilize their talents to the fullest extent" (Ghiselli, 1971, p.82) did indeed take more advantage of the opportunities provided to explore the case study topic than did their colleagues.

4. On the other hand, the **Need for Job Security**, from the Ghiselli instrument, correlated negatively with the number of questions asked ($r = -0.407$; $p = 0.02$) and with the number of areas covered in questioning ($r = -0.386$; $p = 0.03$). In this study, apparently, those respondents who scored higher than their colleagues on their inclination to be "fearful...of unfair actions against them...[and]...unsure of the tenure of their...jobs and status" (Ghiselli, 1971, p.91) were less likely to commit themselves to extensive questioning than were those same colleagues.

5. **The Ghiselli Factor 1 (Managerial Proclivity)** correlated positively with the number of areas covered in questioning in the fact finding portion of the case study ($r = 0.389$; $p = 0.03$). In this study, therefore, respondents who scored highly on managerial proclivity tended to seek information about a broader range of aspects of the case than did their colleagues.

These results serve to strengthen our intuitive sense of the validity of the data collected, and as such are reassuring, although they do little to advance our understanding. There are also some interesting correlations between administrator personality, as measured by the Ghiselli instrument, and the stated

priorities and values of those administrators.

6. **Need for High Financial Reward** correlated positively with "Minimizing disruptions" from the Values/Priorities instrument ($r = 0.356$; $p = 0.04$), indicating that respondents who regard it as a priority to keep their schools running smoothly were more likely to be motivated by the financial rewards of the job.

7. **Self Assurance**, which correlated negatively with the Values/Priorities instrument item "Avoiding unnecessary hurt" ($r = -0.401$; $p = 0.02$), also correlated positively with the item "Improving instructional effectiveness" ($r = 0.354$; $p = 0.04$), as explained above. This would seem to indicate that the more self assured respondents assign more priority to instructional effectiveness but are less concerned about avoiding hurting other people than are their less self assured colleagues.

8. **Achievement Motivation** correlated negatively with the Values/Priorities instrument item "Avoiding future problems" ($r = -0.341$; $p = 0.05$), which seems to indicate that respondents who are most motivated to be successful in their positions are less likely to be concerned about their actions having bad repercussions.

Since the respondent sample was stratified according to experience, correlations between measures of experience and any other variables were of particular interest.

9. **The Future Considerations factor** from the Priorities/Values instrument correlated negatively with the number of years experience in a subordinate position of added responsibility ($r = -0.432$; $p = 0.01$). This seems to indicate that people who spent more time in a subordinate position of added responsibility were less likely to be concerned about future repercussions of their actions.

10. The **Working Class Affinity** scale correlated negatively with several of the experience measures in this study. Furthermore, in factor analysis, this scale stood alone as a single factor. Clearly it is a very influential scale and requires further exploration and definition. The strongest negative correlation was with the participant's total number of years of experience in schools ($r = -0.448$; $p = 0.01$). When this correlation was controlled for age, the relationship was somewhat reduced but remained quite strong ($r = -0.417$; $p = 0.02$). When the correlation is controlled for age and experience as a principal, the relationship is further reduced ($r = -0.398$; $p = 0.03$), but it remains stable when controlled for experience in a subordinate position of added responsibility ($r = -0.400$; $p = 0.03$). Working Class Affinity also correlated negatively with total experience in a position of added responsibility ($r = -0.440$; $p = 0.01$), with the total number of principalships held ($r = -0.413$; $p = 0.02$), and with experience as a principal ($r = -0.465$; $p = 0.007$). The cumulative effect of all of these correlations and their permutations seems to suggest that Working Class Affinity decreases as experience, particularly administrative experience, increases. If the scale is measuring the extent to which administrators identify with classroom teachers, then this relationship would make sense. Given the influence of age and years in the profession, however, it is possible to argue that, as in the original instrument, this scale could be measuring affinity with the working classes, since

those who have been members of the profession longer are likely to have drifted away from (or never had) identification with the working classes. Clearly this study has insufficient data available to adequately explore, let alone resolve, this question.

11. The **Masculinity/Femininity** scale, which Ghiselli discounts as being of little relevance to managerial talent, correlated negatively with teaching experience ($r = -0.410$; $p = 0.02$), indicating that respondents with longer experience as classroom teachers are more likely to show greater evidence of 'intuitiveness and gentleness'. It should be noted that Ghiselli explains that his use of the terms 'masculinity' and 'femininity' is intended to convey the traditional stereotypes attached to these terms and does not in any way imply a direct correlation with gender[3] (1971, p.65). In this sample all of the females did, in fact, score at the feminine end of the scale, but so did 77% of the males; only six respondents (19%) scored on the masculine end of the scale. This scale also correlated negatively with average time in each principalship ($r = -0.423$; $p = 0.01$), indicating that respondents with the more 'aggressive' personality were likely to spend less time in a specific principalship. Both of these correlations remained robust when controlled for other, potentially confounding variables.

One variable which did not correlate with experience in any way was the constructed quality variable: there is no relationship at all in this sample between experience as a principal and adjudged expertise as a problem solver. There are, however, other factors which do seem to be statistically related, either positively or negatively, with the quality measure.

12. **"Improving instructional effectiveness"** from the Priorities/Values instrument correlated negatively with the mean of the judged quality of response to the case study ($r = -0.377$; $p = 0.04$). Thus, respondents who were most concerned about instructional effectiveness were judged as responding less well to the case study problem than their colleagues. This seems to be in opposition to the Leithwood & Stager (1986) finding that "better" principals tended to emphasise program priorities.

13. **Supervisory Ability** from the Ghiselli instrument also correlated negatively with the mean rating of the quality of response to the case study ($r = -0.369$; $p = 0.05$). This seems to indicate that those who score higher on their ability to supervise the work of others tended to do less well in the eyes of our judges[4] on their ability to understand and deal with the given situation. At first glance this might seem contradictory, but on reflection, the ability to supervise others could be considered to be more of a middle management, task-specific function, and as such not necessarily related to the more global ability to perceive, analyze and solve problems.

14. The **number of actions taken** in the think aloud portion of the case study, correlated most strongly with the adjudged quality of actions ($r = 0.822$; $p = 0.00$): those who did most were judged as doing best.[5] Judged quality also correlated positively with the total number of words spoken during the exercise ($r = 0.378$; $p = 0.04$), and questioning efficiency ($r = 0.480$; $p = 0.008$). Thus, the respondents whom our judges evaluated as having the best approaches to solving the case study problem were also the respondents who elicited information most efficiently during the fact finding portion of the exercise. Taken together,

this all seems to conform to the Leithwood & Stager (1986) finding that "better" principals were more reflective, gave fuller explanations and sought more clarification of the problem.

There were no correlations between the judged quality of a participant's response to the case study and any of the measures of experience collected in this study: more experienced principals are not, according to our judges, any better at solving problems than are inexperienced principals. There were no significant differences between the mean scores of the four experience groups, and Aspirants actually scored a higher mean than either Rookies or Veterans.

Indeed, there were no correlations between experience in the principalship per se, and anything measured in this study. Respondents who had spent more time in a subordinate position of added responsibility were less worried about the future repercussions of their actions. Experience of every kind, including just age, appeared to serve to lower a respondent's score on Working Class Affinity. Respondents with more experience in classroom teaching tended to score on the gentler end of the M/F scale. Aspirants asked more questions in the fact finding portion of the exercise than did respondents with experience in the principalship, but their questions were less efficient: principals with experience asked fewer questions but elicited more information with those questions.

Those factors which did correlate with judged quality pose more questions than they answer. The Supervisory Ability scale, which is the single most influential factor in managerial talent according to its author, was a poor predictor of judged quality of problem solving in this study. Similarly, there is no doubt that one of the most important factors in the case study is the lack of proper instructional focus, and yet respondents who chose this as a priority in

the relevant paper and pencil measure tended to be judged as doing less well in solving the case than did their colleagues. The best predictors of quality, in this study, were the number of actions taken in solving the problem, the sheer amount of actual talking about the problem, and the efficiency of questioning in the fact-finding portion of the process. Although our judges were given summaries which itemized actions, the last two measures were not, in fact, available to them, and cannot, therefore, have affected their judgements.

CONCLUSIONS AND COMMENTS

The purpose of the pencil and paper battery was three-fold: to generate quantitative data to test plausible hypotheses about the relationship between problem solving strategies and other variables; to increase the opportunity for triangulation within the total data set; and to clarify and control background variables.

Triangulation of quantitative measures with observed behaviours has yielded a wealth of information which demands further analysis. Clearly there are relationships between personality variables and professional orientations, as measured in these instruments, and the problem solving behaviours observed in other portions of the data. Some of these have already been explored: principals who value student welfare most do seem to approach problem solving from a somewhat different direction from that taken by their colleagues who value maintaining smooth operations more; principals who are less self confident or who feel less secure in their jobs operate differently from those who are self assured and self motivated. The analysis presented here, however, has only touched the surface of what appears to be a complex inter-relationship of personal and

professional factors which influence behaviour. What seems to be relatively certain, however, is that brute experience in the principalship is at best only a very minor, but probably negligible, factor in this equation.

The detailed personal profile which every respondent completed has proved to be a most interesting source of data. Certainly it would not have been possible to control for individual background variables without this information, but, more importantly, some of our early assumptions might not have been so easily refuted. For example, the detailed information about age and specific experience exploded our assumption that people who had been principals for more than 20 years would be significantly older than those who have been principals for only 2 years and would have been in the profession for significantly longer. The subtleties of experience proved to be important in analysis: those who had spent longer in subordinate positions of added responsibility had developed slightly different behaviour patterns and slightly different orientations; those who had moved often as principals were different from those who had remained in each position for a longer time. The inter-relationships of these variables and problem solving behaviour have not yet been fully explored, and probably require a much larger sample than we have here. Considerable scope also remains for the exploration of the many variables relating to personal and professional interests and experience which have not yet been analyzed.

As an unexpected benefit, the questionnaire also provides sufficient information on each respondent's personal and professional life to encapsulate the essence of the individual long after he/she has faded from the researcher's memory. Future work may include the building of typical case studies from these data.

The most striking result of these analyses is that the expected relationship

between expertise, measured by the quality of problem solving, and experience in the principalship was disproved. This conclusion, of course, rests heavily on the assumption that our judges' evaluations are valid, an assumption which we intend to explore in future analysis. In the interim, however, if we assume the validity of the evaluations, it is possible to say, with a certain amount of confidence, that more experienced principals are not necessarily better problem solvers. Apparently this supports the view that "...expertise evolves and develops with experience but...experience can only contribute to expertise if practitioners are capable of learning from it" (Kennedy, 1987, p.148). Clearly this requires further investigation.

If, indeed, experience does not necessarily lead to improvement, some of the basic assumptions which are made in the field of educational administration must be questioned. For example, mentoring has become a very popular concept of late, and its primary foundation is the bringing together of an experienced practitioner with an inexperienced practitioner, such that the former can pass along some of his/her accumulated wisdom to the latter. The fundamental assumption which validates this process is that the more experienced practitioner will, as a matter of course, be more expert. If there is reason to suspect that the inexperienced practitioner may be equally, or even more expert, and equally, or even better, equipped to solve the problems of the job, then there is reason to question the appropriateness of the practice altogether.

Similarly, if on-the-job experience does not necessarily contribute to expertise, then training programs which involve internships might also be operating on a false assumption: perhaps the internship serves not to allow the candidate to develop expertise but rather to demonstrate existing expertise which is either inherent or learned. If this were to be the case, the only justification

for the internship would have to be as an evaluative tool, allowing the superordinate administrator to decide whether the candidate's demonstrated expertise was adequate, and this of course would only be useful if the internship were structured in such a way as to allow for the rejection of some candidates.

There could be many explanations for why experience and expertise were not, apparently, connected in this study. The historical situation, which allowed for the Veteran principals to be promoted to the principalship with very little teaching experience, very few academic qualifications and no specific preparatory training, might provide one possible suggestion: principals in different experience categories did not start from the same point. It might be argued that newer principals have learned from their academic and preparatory training what older principals have learned from experience, such that their "expertise", although gained in different ways, is effectively equivalent. This explanation is rendered more plausible by the relatively small difference between the mean ages of the different groups of principals and the mean years spent in the profession: perhaps it is not experience in the principalship which makes a difference so much as experience in the profession. Quality evaluations of the transcripts of the think-aloud solutions offered by the Entrant group (i.e., respondents with no experience in the profession), which are currently being executed, might provide a quick answer to this speculation.

Another possible explanation was, in fact, offered by a group of our Veteran principals over lunch: they agreed that, in their own perceptions, none of them would qualify as principals under the modern stringent requirements, and further they agreed that they probably would not want to, since both the process of qualifying and the job of the principal have become far more complex in the twenty-odd years since they were promoted.

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ENDNOTES

1. Although this instrument is now almost 20 years old, it seems to have retained its validity. The language used in some of the labels, however, has not weathered the years quite as well.

2. Of course, much more of this type of cross-examination is possible, and will, it is hoped, be conducted in the future. For the present paper, however, the opportunities which emerged through correlations within the quantitative data are the only ones explored.

3. It is recognized, and regretted, that although this was a perfectly acceptable distinction in 1971, it is likely to be offensive to some in 1990. Were Ghiselli writing today, he would no doubt create different labels. We do not feel comfortable, however, in doing this on his behalf, and thus we persist with his original labels.

4. This raises the interesting question of what influences "the eyes of our judges" were subject to. The point is raised in an earlier paper (see Nagy) that there is a pattern evident in what our judges did and did not value. In future work with the data from this project we intend to undertake two levels of analysis: first we hope to establish a much wider evaluative base, giving us more reliable measures of quality of response; secondly, we hope to explore the priorities and values assumed by the judges in making their evaluations by incorporating explanations and discussions of those judgements. For the present paper, however, we will continue to use the mean of the quality ratings given by our judges as a specific measure, recognizing that it probably tells us as much about our judges as it does about our respondents.

5. One of our judges commented that he had noticed this tendency and tried consciously to avoid equating length with quality.

TABLE 1
CORRELATIONS OF JUDGES' EVALUATIONS

	Judge 1	Judge 2	Judge 3	Qualmean
Judge 1	1.000	0.709	0.684	0.903
Judge 2		1.000	0.729	0.899
Judge 3			1.000	0.887

TABLE 2
QUESTIONNAIRE 1 - PRIORITIES/VALUES - FREQUENCIES

RANK	RANGE	MEAN	PRIORITY/VALUE
1	2 - 8	6.6	Enhancing students' sense of self-worth
2	1 - 8	5.6	Building self-confidence in staff members
3	1 - 7	5.5	Enhancing the quality of student life and experience
4	2 - 8	5.2	Improving instructional effectiveness
5	2 - 7	4.0	Making the most efficient use of school resources
6	0 - 8	3.3	Avoiding unnecessary hurt to people
7	0 - 8	2.7	Following board policies and procedures
8	0 - 5	1.7	Avoiding future problems
9	0 - 5	1.4	Minimizing disruptions.

TABLE 3
QUESTIONNAIRE 1 - PRIORITIES/VALUES - FACTOR ANALYSIS

FACTOR	LOADING	PRIORITY/VALUE
FACTOR 1	.816	Enhancing the quality of student life and experience
	.807	Enhancing students' sense of self-worth
	-.801	Making the most efficient use of school resources
FACTOR 2	.848	Minimizing disruptions
	-.674	Following board policies and procedures
FACTOR 3	-.899	Avoiding unnecessary hurt
	.878	Improving instructional effectiveness
FACTOR 4	.901	Avoiding future problems
	-.651	Building self-confidence in staff members

[Accounts for 80% of the variance]

TABLE 4

GHISELLI MEANS AND STANDARD DEVIATIONS

	This study		Ghiselli's managers	
Scale	Mean	SD	Mean	SD
Supervisory Ability	29.65	5.54	30.46	6.26
Intelligence	40.87	7.69	41.61	7.57
Initiative	32.41	9.29	32.86	6.40
Self Assurance	27.97	4.11	28.30	5.85
Decisiveness	20.94	4.02	22.23	4.85
Masculinity/Femininity	13.47	2.64	15.31	2.39
Maturity	27.44	5.56	31.63	5.83
Working Class Affinity	13.84	2.81	14.49	3.28
Achievement Motivation	39.62	9.85	41.81	8.65
Need for Self Actualization	11.12	3.38	10.50	2.50
Need for power	9.78	2.31	10.80	2.17
Need for High Financial Reward	4.06	2.04	4.05	1.85
Need for Security	8.96	4.31	10.26	3.61

TABLE 5
GHISELLI MEAN SCORES BY GROUP

GROUP	SAb	In	It	SAs	Dec	MF	Mat	WCA	AM	NSF	NP	NHR	NS
Aspirants	29.7	41.3	34.2	29.7	22.7	12.8	26.5	**16.1**	37.5	12.0	9.2	4.0	8.0
Rookies	30.2	**43.9**	31.2	27.6	21.2	14.4	**30.9**	15.4	41.7	10.9	9.6	4.0	8.7
Seasoned	**26.2**	**35.9**	28.6	25.9	20.8	12.4	27.4	13.4	41.2	11.0	9.9	3.7	10.7
Veteran	**32.6**	42.4	35.5	28.6	20.1	14.2	**25.0**	**11.7**	41.4	10.6	10.1	4.5	8.2
TOTAL	29.7	40.9	32.4	27.9	21.2	13.4	27.4	14.1	40.4	11.2	9.7	4.0	8.9
Ghiselli managers	30.5	41.6	32.9	28.3	22.2	15.3	31.6	14.5	41.8	10.5	10.8	4.0	10.3

SAb = Supervisory Ability
In = Intelligence
It = Initiative
SAs = Self Assurance
Dec = Decisiveness
MF = Masculinity/Femininity
Mat = Maturity
WCA = Working Class Affinity
AM = Achievement Motivation
NSF = Need for Self Actualization
NP = Need for Power
NHR = Need for High Financial Reward
NS = Need for Job Security

Bolded figures denote significant differences.

TABLE 6
GHISELLI FACTOR ANALYSIS

FACTOR 1	.784	Self Assurance
	.780	Need for Self Actualization
	.758	Need for Job Security
	.659	Supervisory Ability
	.605	Decisiveness
	.497	Intelligence
FACTOR 2	-.852	Need for High Financial Reward
	.717	Maturity
	.679	Achievement Motivation
FACTOR 3	-.851	Masculinity/Femininity
	-.728	Intelligence
	-.650	Initiative
FACTOR 4	.877	Working Class Affinity

[Accounts for 71% of the variance]

TABLE 7
DEMOGRAPHIC VARIABLE MEANS FOR EXPERIENCE GROUPS

	Aspirants	Rookies	Seasoned	Veterans
Age	39	43	46	49
Years in schools	16.5	22.6	25.4	28.1
SPAR experience	0.9	9.4	3.6	0.4
Principal experience	0.0	1.6	13.6	23.9